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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
EMPIE, NATHAN H	

ART UNIT	PAPER NUMBER
1792	

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10/19/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/598,181	VATANEN ET AL.	
	Examiner	Art Unit	
	NATHAN H. EMPIE	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-28* is/are pending in the application.

4a) Of the above claim(s) *24-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/31/09, 8/21/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I claims 11-23 in the reply filed on 9/14/09 is acknowledged.

Claims 24-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 9/14/09.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 11, 14, 15, 19, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (JP 06-142590; hereafter Nakamura) in view of Arai (JP 05-104062; hereafter Arai).

3. Claims 11 and 19: Nakamura teaches a method of coating a paper web with plane-fed curtain coater, comprising a cross machine direction extending nozzle beam provided with at least a first feed chamber (not numbered) and a first nozzle feed slot (such as 8d) connected to the first feed chamber, and a second feed chamber and a second feed slot (such as 8c) connected to the second feed chamber (see, for example, abstract, [0017-0022], fig 1 and fig 2), comprising;

4. feeding a first layer of first coating material from the first nozzle feed slot on top of a flow plane (9) defined by the nozzle beam, and flowing the first layer in a machine direction (see, for example, Fig 2),

5. feeding a second layer of second coating material from the second nozzle feed slot on top of the flow plane defined by the nozzle beam, and flowing the second layer of in the machine direction along the flow plane (9) (see, for example, Fig 2),

6. determining the thickness of at least one of the first or second layers of coating material on top of the flow plane downstream of the first or second nozzle feed slot (see, for example, Fig 1, and [0020-0023])

7. controlling a first/second feed rate of the first/second coating material from the first/second feed chamber to the first/second nozzle feed slot on the basis of the determined thickness of respectively the first / second layer of coating material to achieve a selected thickness for at least one of first or second coating material (see, for example, Fig 1-5, and [0020-0027], wherein the collected data from the thickness measuring means (20) is output to the control means (42) which based on thickness fluctuation values from (20) the coating liquid amount of each coating liquid is calculated and the coating liquid feeding means is appropriately adjusted).

8. The thickness monitoring device of Nakamura is taught to be movable in both width and longitudinal directions to gather coating thickness information across the coating die surface (see, for example, Fig 1 and Fig 3, and [0020-0023]). But Nakamura does not explicitly teach wherein the thickness data collected is a cross machine direction thickness profile. Arai teaches a method of applying a continuous

coating onto a web material wherein the thickness is measured and a feedback mechanism is present to correct for deviations in thickness (See, for example, abstract, and Fig 1-4). Arai teaches that it is well known in the art that deviations in coating thickness in a cross machine direction occur and that overall coating uniformity and functionality can be improved by monitoring such cross machine direction thickness profiles (see, for example, [0009-0052], Fig 1-2). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have determined a cross machine direction thickness profile as the thickness data gathered and based on controlling in the method of Nakamura as such data would provide form more uniform surfaces/ resulting properties and greater control over the deposited film.

9. Claims 14 and 21: Nakamura in view of Arai teach the method of claims 11 and 19 (described above) wherein Nakamura further teaches that thickness measurements are obtained by at least one sensor making a non-contact measurement of thickness (see, for example, via a light interference method, [0029-0034], Fig 6-12).

10. Claims 15 and 22: Nakamura in view of Arai teach the method of claims 14 and 21 (described above) wherein Nakamura has taught moving at least one sensor in a cross machine direction along a nozzle beam (see, for example, for example, Fig 1 and Fig 3, and [0020-0023]) and wherein Arai has taught where along such movement a cross machine thickness profile can be gathered, essentially across the entire width of the web (see, for example, Fig 1, [0047]).

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Arai as applied to claim 11 above, and further in view of Chino et al (US patent 4,937,093).

12. Claim 12: Nakamura in view of Arai have taught the method of claim 11 (described above) wherein a plurality of coating layers formed and the collection of a coating thickness profile have been taught (described above), and wherein Nakamura has explicitly taught that the feeding of each separate coating material is controlled based on the feedback loop from the thickness measurements (Fig 1-5, and [0020-0027]) but they do not explicitly teach wherein a cross machine direction thickness profile of each coating layer is determined and used as the basis for control. Chino teaches a method of applying a plurality of layers to a continuously running web substrate (See, for example, Fig 1, abstract). Chino further teaches that it is known and desirable in the art to control the thickness of each coating within a coating stack of a multilayered coating, and that it is desirable to monitor and determine the coating thickness of each layer of the multilayer to ensure proper film properties (see, for example, col 1 line 1 - col 2 line 50). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have determined a cross machine direction thickness profile for each coating layer as the thickness data gathered and based on controlling in the method of Nakamura in view of Arai as such data would provide form more uniform surfaces and subsurfaces resulting in more predictable layer properties and greater control over the deposited film.

13. Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Arai as applied to claim 11 above, and further in view of Kustermann (US patent 6,248,174; hereafter Kustermann).

14. Claims 13 and 20: Nakamura in view of Arai have taught the method of claims 11 and 19 (described above) but neither explicitly teach wherein the step of controlling further comprises increasing or decreasing a by-pass flow of the coating material through the first / second feed chamber. Kustermann teaches a method of applying a coating onto a continuous web from a nozzle slot coater (see, for example, abstract, and Fig 1). Kustermann further teaches that a feed chamber (distribution channel (24) can comprise a by-pass flow (flow through exit discharge opening (32)) to ensure the coating medium is moving in the distribution channel and as a predictable means of regulating and varying the amount of coating material being distributed to the web (See, for example, col 4 lines 9-22, and col 5 lines 15 - 35). As both Kustermann and Nakamura in view of Arai have taught methods of regulating the flow of coating in a continuous deposition process it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated increasing or decreasing a bypass flow of the coating material through the respective feed chamber in the method of Nakamura in view of Arai in order to achieve the predictable result of regulating the flow of the coating material and additionally ensuring that the coating medium is moving in the distribution channel (feed chamber).

15. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Arai as applied to claim 11 above, and further in view of Okada et al. (JP 2000-343017; hereafter Okada).

Claim 17: Nakamura in view of Arai have taught the method of claims 11 and 19 (described above), wherein Arai has further taught manipulating an element (19) along a cross machine direction whereby the effective area of the flow path of the fed coating is altered to achieve a selected cross machine direction thickness profile for at least one coating material (see, for example, Fig 3, and [0051-0055]). But neither Nakamura nor Arai explicitly teach the element being manipulated resides in a plurality of cross machine feed holes which communicate between said at least one feed chamber and the nozzle slot whereby the effective area of the feed holes is adjusted to achieve the selected cross machine direction thickness profile. Okada teaches a method of applying a coating to continuous web surface via a die fed coating supply system (see, for example, Fig 8). Okada further teaches enhancing the regulation of applied coated area by incorporating a plurality of cross machine direction feed holes (80) which communicate between a feed chamber (76) and a nozzle slot (74) and wherein the flow through the plurality of feed holes is manipulated by an element (82) disposed in each of the plurality of feed holes (see, for example, Fig 8, abstract, [0009-0012], and [0048-0052]). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a plurality of cross machine direction feed holes which communicate between a feed chamber and a nozzle slot and wherein the flow through the plurality of feed holes is manipulated by an element disposed in each of the

plurality of feed holes to control the selected thickness profile into the method of Nakamura in view of Arai as such an incorporation would enhance the regulation of applied coating material to specific areas and specific amounts.

Claim 18: Nakamura in view of Arai and Okada have taught the method of claim 17 (described above) wherein Okada further teaches the coating material flowing between said at least one feed chamber (76) and the nozzle slot (74) flows though at least one equalizing chamber (78), which extends in the cross machine direction (crosswise of the web F) and into which equalizing chamber the feed holes (80) open (see, for example, Fig 8, and [0048-0052]).

16. Claims 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Arai as applied to claim 11 and 19 above, and further in view of Kondo et al (US patent 6,248,406; hereafter Kondo) and Yapel et al (US patent 5,837,324; hereafter Yapel).

17. Claims 16 and 23: Nakamura in view of Arai have taught the method of claims 11 and 19 involving the step of determining the cross machine direction thickness profile of a coating as it flows in the machine direction along the flow plane (described above) but neither explicitly teach accomplishing the determination by measuring the surface speed of the layer of coating material. Kondo teaches a continuous curtain coating method onto a moving web (See, for example, abstract, Fig 1). Kondo further teaches that maintaining a uniform evenness along the lateral coating direction is a well known concern in the prior art that deviations in coating thickness can be linked to deviations in

flow speed (See, for example, col 1 line 25- col 2 line 45). Kondo teaches that it is well known in the art to measure surface speed of a flowing coating along its width to monitor the coating flow properties and lateral thickness uniformity (see, for example, col 7 lines 1 - 65). Yapel teaches a continuous coating method (die / slide /curtain) onto moving substrates (see, for example, abstract, col 1 lines 1 - 15). Yapel further teaches that it is well known in the art to collect thickness profiles (depth profiles), and further teaches wherein both devices as well as analytical or numerical methods, such as using fluid flow modeling such as FIDAP or NEKTON, are well known in the art and predictable methods of obtaining thickness profiles (see, for example, col 9 line 60 - col 10 line 13). As Nakamura in view of Arai and Kondo and Yapel teach methods of measuring and controlling coating thickness in slot fed curtain coating methods, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute one method for the other (determining the cross machine direction thickness profile by measuring a surface speed of a coating layer followed by analytical / numerical manipulation) to achieve the predictable result of determining the cross machine direction thickness profile.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN H. EMPIE whose telephone number is (571)270-1886. The examiner can normally be reached on M-F, 7:00- 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. H. E./
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792